EXHIBIT G

California State Lands Commission Presurvey Notice Requirements for Permittees to Conduct Geophysical Survey Activities

All parts of the Presurvey Notice must be adequately filled out and submitted to the CSLC staff a minimum of twenty-one (21) calendar days prior to the proposed survey date to ensure adequate review and approval time for CSLC staff. Note that one or more of the items may require the Permittee to plan well in advance in order to obtain the necessary documentation prior to the Notice due date (e.g., permits from other State or Federal entities). Please use the boxes below to verify that all the required documents are included in the Presurvey Notice. If "No" is checked for any item, please provide an explanation in the space provided. If additional space is needed, please attach separate pages.

Please use the boxes below to verify that all the required documents are included in the Presurvey Notice. If "No" is checked for any item, please provide an explanation in the space provided. If additional space is needed, please attach separate pages.

Yes	No	
X	☐	Geophysical Survey Permit Exhibit F
X	☐	Survey Location (including a full-sized navigation chart and GPS coordinates for each proposed track line and turning point) Explanation: _____
X	☐	Permit(s) or Authorization from other Federal or State agencies (if applicable) Explanation: *Monterey Bay National Sanctuary Permit # MBNMS-2014-029A, California State Parks permit*
X	☐	21-Day Written Notice of Survey Operations to Statewide Geophysical Coordinator/
X	☐	U.S. Coast Guard Local Notice to Mariners
X	☐	Harbormaster and Dive Shop Notifications Explanation: _____
X	☐	Marine Wildlife Contingency Plan Explanation: _____
X	☐	Oil Spill Contingency Plan Explanation: _____
☐	X	Verification of California Air Resources Board's Tier 2-Certified Engine Requirement Explanation: *Vehicle engines are gasoline fueled and exempt from Tier 2 Certification*
X	☐	Verification of Equipment Service and/or Maintenance (must verify sound output) Explanation: _____
☐	X	Permit(s) or Authorization from California Department of Fish and Wildlife for surveys in or affecting Marine Protected Area(s) (if applicable). Explanation: *Survey area is not within nearby Soquel Canyon or Portuguese Ledge MPAs*

._____

NOTE: CSLC staff will also require verification that current biological information was obtained and transmitted as outlined in Section 5 of this permit

EXHIBIT F

PRESURVEY NOTIFICATION FORM

Applicant/Permittee's Mailing Address:
Jenny White
USGS Pacific Coastal and Marine Geology
400 Natural Bridges Drive
Santa Cruz, CA 95060

Date: 8/19/2016
Jurisdiction: Federal ____State __X_Both ____
If State: Permit #PRC 8394
Region: III
Area: Santa Cruz, CA

GEOPHYSICAL SURVEY PERMIT

Check one: __X__ New survey ____Time extension of a previous survey

U.S.G.S. Pacific Coastal and Marine Geology (Applicant/Permittee) will conduct a geophysical survey offshore California in the survey area outlined on the accompanying navigation chart segment. If you foresee potential interference with commercial fishing or other activities, please contact the person(s) listed below:

FEDERAL WATERS (outside 3 nautical miles)

1) Applicant's representative: N/A
2) Federal representative: (e.g., Bureau of Ocean Energy Management [BOEM] or National Science Foundation [NSF])

NOTE: Any comments regarding potential conflicts in Federal waters must be received by the Applicant's Representative and lead Federal agency within ten (10) days of the receipt of this notice.

STATE WATERS (Inside 3 nautical miles)

1) Permittee's representative: Jenny White
2) CSLC representative: Richard Greenwood

NOTE: Any comments regarding potential conflicts in State waters should be received as soon as possible by the Permittee's representative, no more than fifteen (15) days after the receipt of this notice.

This notice is for one five-day survey to assess changes in seafloor morphology related to seasonal storms and El Nino Seasonal Oscillations (ENSO), and future anthropogenic influences. The survey will be conducted inside the proposed expected dates of operation based on tides and surf/weather conditions.

1. Expected Date of Operation: Sep 12 – 21, 2016 (option 1)

Sep 26 – Oct 7, 2016 (option 2)

Oct 11-21, 2016 (option 3)

2. Hours of Operation: 7AM to 5PM
3. Vessel Names: CPS Duke, CPS Eddie (Personal Watercraft - Jet Skis)
4. Vessel Official Number: USGS-9004807, USGS- 9004808
5. Vessel Radio Call Sign: None Assigned
6. Vessel Captain's Name: Timothy Elfers, Daniel Hoover
7. Vessel will monitor Radio Channel(s): 82a,16
8. Vessel Navigation System: Differential GPS
9. Equipment to be used:

1. Odom Echotrac Bathymetric Echo Sounder
   a. Frequency (Hz, kHz): 200 kHz
   b. Source level: (dB re 1 µPa at 1 meter (m) (rms): 93 dB RMS
   c. Number of beams, across track beam width, and along track beam width:
      1 beam, 9° conical beam. 5m along track, 5m across track
   d. Pulse rate and length: 4.5-13.5 pps at 34-500 µ seconds depending on water depth.
   e. Rise time: 7 µ seconds
   f. Estimated distances to the 190 dB, 180 dB, and 160 dB re 1 uPa (rms) isopleths,
      190 dB: <1M ; 180 dB: <1M ; 160 dB: <1M

      These estimates are based on the underwater sound propagation equation:

      RSPL= SL-20log (R/Ro)-AR, where

      RSPL=received sound potential level

      SL= RMS source level re. 1 uPa (rms) based on manufacturer's specifications

      R= Distance

      Ro= Reference Distance (1 m)

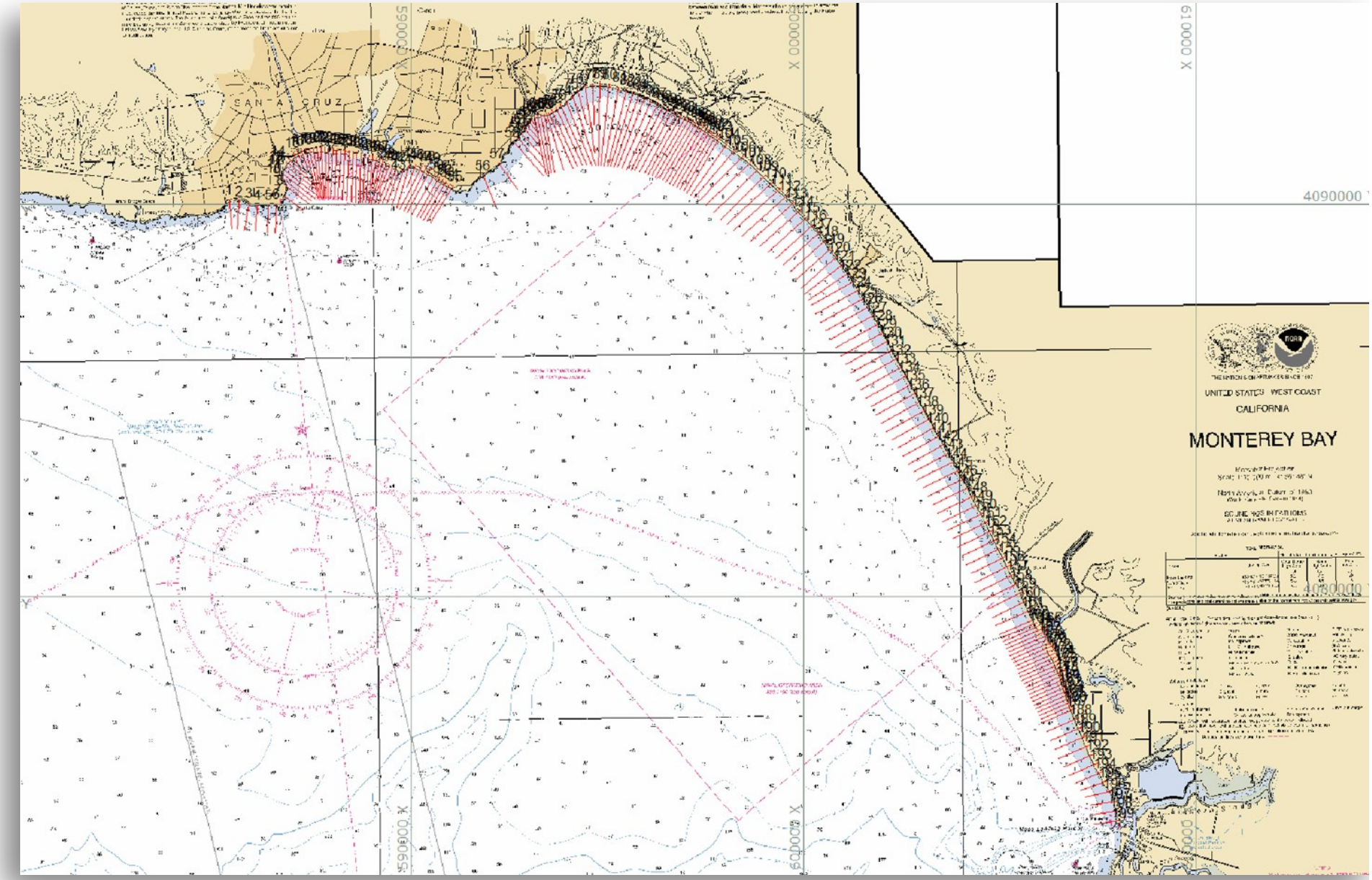
      A= sound absorption coefficient

   g. Deployment depth: 0.25 m
   h. Tow speed: 4 knots
   i. Approximate length of cable tow: 0

Applicant's Representative:
Daniel Hoover
US Geological Survey
400 Natural Bridges
Drive
Santa Cruz, CA 95060
831-460-7544

California State Lands Representative:
Richard B. Greenwood
Statewide Geophysical Coordinator
200 Oceangate, 12th Floor
Long Beach, CA 90802-4331
(562) 590-5201

BOEM Representative:
Joan Barminski
Chief, Office of Reservoir & Production
770 Paseo Camarillo
Camarillo, CA 93010
(805) 389-7707


SANTA CRUZ
610000 X
590000 X
600000 X
4090000
4080000
UNITED STATES WEST COAST
CALIFORNIA
MONTEREY BAY

The survey area is bounded by the coordinates:

Upper L: 36 58.85, -122 2.47
Lower L; 36 48.44, -122 2.47
Upper R: 36 58.85, -121 47.29
Lower R: 36 48.44, -121 47.29

The track line coordinates are:

Line No.	Start Line		End Line	
	LAT	LON	LAT	LON
Line0103	36.95313	-122.04112	36.94635	-122.04033
Line0104	36.95285	-122.03839	36.94639	-122.03880
Line0105	36.95222	-122.03542	36.94611	-122.03682
Line0106	36.95201	-122.03293	36.94575	-122.03370
Line0107	36.95201	-122.02987	36.94540	-122.03028
Line0108	36.95206	-122.02768	36.94536	-122.02797
Line0109	36.95395	-122.02546	36.95067	-122.02004
Line0110	36.95618	-122.02483	36.95208	-122.01843
Line0111	36.95800	-122.02595	36.95260	-122.01743
Line0112	36.95894	-122.02555	36.95320	-122.01658
Line0113	36.96007	-122.02550	36.95384	-122.01588
Line0114	36.96084	-122.02489	36.95534	-122.01634
Line0115	36.96129	-122.02395	36.95672	-122.01689
Line0116	36.96186	-122.02302	36.95871	-122.01870
Line0117	36.96233	-122.02181	36.96163	-122.02149
Line0118	36.96280	-122.02090	36.96058	-122.01988
Line0119	36.96296	-122.01976	36.95972	-122.01848
Line0120	36.96327	-122.01879	36.95348	-122.01567
Line0121	36.96345	-122.01771	36.95331	-122.01520
Line0122	36.96349	-122.01669	36.95335	-122.01474
Line0123	36.96356	-122.01566	36.95328	-122.01436
Line0124	36.96369	-122.01461	36.95327	-122.01387
Line0125	36.96359	-122.01353	36.95344	-122.01342
Line0126	36.96343	-122.01251	36.95326	-122.01285
Line0127	36.96342	-122.01134	36.95304	-122.01217
Line0128	36.96344	-122.01023	36.95303	-122.01105
Line0129	36.96357	-122.00909	36.95288	-122.01001
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Line0131	36.96317	-122.00678	36.95257	-122.00746
Line0132	36.96268	-122.00561	36.95236	-122.00611
Line0133	36.96231	-122.00451	36.95235	-122.00503
Line0134	36.96222	-122.00340	36.95222	-122.00377
Line0135	36.96046	-122.00237	36.95202	-122.00287
Line0136	36.96107	-122.00119	36.95209	-122.00191

Line0137	36.96140	-122.00010	36.95550	-122.00087
Line0138	36.96125	-121.99911	36.95206	-122.00116
Line0139	36.96112	-121.99815	36.95516	-121.99982
Line0140	36.96087	-121.99738	36.95183	-122.00047
Line0141	36.96055	-121.99636	36.95514	-121.99856
Line0142	36.95992	-121.99553	36.95190	-121.99948
Line0143	36.95950	-121.99463	36.95184	-121.99840
Line0144	36.95922	-121.99355	36.95190	-121.99728
Line0145	36.95823	-121.99296	36.95182	-121.99605
Line0146	36.95885	-121.99151	36.95140	-121.99462
Line0147	36.95898	-121.99013	36.95093	-121.99315
Line0148	36.95918	-121.98842	36.95563	-121.99015
Line0149	36.95881	-121.98698	36.95056	-121.99222
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Line0153	36.95645	-121.98193	36.94874	-121.98747
Line0154	36.95598	-121.98092	36.94839	-121.98661
Line0155	36.95561	-121.97990	36.94795	-121.98559
Line0156	36.95524	-121.97877	36.94758	-121.98470
Line0157	36.95492	-121.97775	36.94726	-121.98371
Line0158	36.95775	-121.96816	36.95117	-121.96498
Line0159	36.96048	-121.96347	36.95473	-121.95835
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Line0171	36.97145	-121.94983	36.95919	-121.94531
Line0172	36.97174	-121.94911	36.95967	-121.94275
Line0173	36.97226	-121.94811	36.96007	-121.94146
Line0174	36.97290	-121.94687	36.96030	-121.93998
Line0175	36.97359	-121.94568	36.96029	-121.93857
Line0176	36.97473	-121.94435	36.96008	-121.93725
Line0177	36.97592	-121.94238	36.95998	-121.93605
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Line0183	36.97686	-121.92954	36.95996	-121.93371
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Line0185	36.97596	-121.92549	36.95972	-121.93191
Line0186	36.97549	-121.92388	36.95954	-121.93089
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Line0192	36.97145	-121.91474	36.95854	-121.92354
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Line0194	36.97046	-121.91211	36.95784	-121.92118
Line0195	36.96992	-121.91098	36.95759	-121.92019
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Line0211	36.95651	-121.88879	36.94734	-121.90055
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Line0213	36.95338	-121.88475	36.94470	-121.89707
Line0214	36.95192	-121.88267	36.94345	-121.89454
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Line0217	36.94687	-121.87698	36.93959	-121.88721
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Line0220	36.94164	-121.87168	36.93519	-121.88081
Line0221	36.93984	-121.86999	36.93313	-121.87949
Line0222	36.93799	-121.86837	36.93124	-121.87784
Line0223	36.93617	-121.86681	36.93002	-121.87672
Line0224	36.93435	-121.86521	36.92847	-121.87593
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Line0226	36.93051	-121.86221	36.92546	-121.87372
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Line0245	36.89262	-121.83741	36.88890	-121.84612
Line0246	36.89056	-121.83607	36.88716	-121.84497
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Line0255	36.87259	-121.82449	36.86940	-121.83260
Line0256	36.87056	-121.82330	36.86731	-121.83149
Line0257	36.86841	-121.82216	36.86535	-121.83031
Line0258	36.86633	-121.82102	36.86326	-121.82913
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Line0284	36.83762	-121.80507	36.83506	-121.81259
Line0285	36.83677	-121.80464	36.83426	-121.81216
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Line0292	36.82705	-121.80014	36.82471	-121.80691
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Line0294	36.82306	-121.79755	36.82062	-121.80447
Line0295	36.82094	-121.79639	36.81874	-121.80295
Line0296	36.81907	-121.79490	36.81688	-121.80120
Line0297	36.81697	-121.79365	36.81531	-121.79960
Line0298	36.81495	-121.79133	36.81378	-121.79826
Line0299	36.81259	-121.79090	36.81196	-121.79682
Line0300	36.81046	-121.78998	36.80971	-121.79598
Line0301	36.80818	-121.78971	36.80745	-121.79586

White, Jennifer <jennifer_white@usgs.gov>

Pre-survey Notice of Geophysical Survey Operations on Monterey Bay - Geophysical Coordinator and Notice to Mariners

White, Jennifer <jennifer_white@usgs.gov> Mon, Aug 22, 2016 at 11:54 AM
Draft To: slc.ogpp@slc.ca.gov, D11LNM@uscg.mil
Cc: "richard.greenwood" <Richard.Greenwood@slc.ca.gov>, "Keen, Kelly@SLC" <Kelly.Keen@slc.ca.gov>

PRE SURVEY NOTIFICATION FOR GEOPHYSICAL SURVEY

The USGS Pacific Coastal and Marine Science Center (PCMSC) will be conducting one five-day near shore geophysical survey from Santa Cruz to Moss Landing, CA under California State Lands Permit #8394. A bathymetric survey using two personal watercraft, each equipped with a 200 kHz single beam echo sounder, will be used to conduct cross shore transects from within the surf zone out to 1200m from shore to document the effects of large wave events on seafloor morphology. One of the following three operational windows will be chosen based on scheduling and conditions.

September 12-21, 2016

September 26 - October 7, 2016

October 11-21, 2016

In keeping with our California State Lands Permit requirements, we are providing you with the attached Geophysical Pre-Survey Notice for your information.

--

Jenny White
Marine Operations Manager
Pacific Coastal and Marine Science Center
U.S. Geological Survey
(831) 818-8915 cell
(831) 460-7485 work

CSLC EXHIBIT F - Monterey Bay Storm Impacts Sept-Oct 2016.docx
467K

Pre-survey Notice of Geophysical Survey Operations on Monterey Bay - Harbormasters

White, Jennifer <jennifer_white@usgs.gov> Mon, Aug 22, 2016 at 11:56 AM
Draft To: cizenstark@santacruzharbor.org, razzeca@mosslandingharbor.dst.ca.us, mcintyre@mosslandingharbor.dst.ca.us, scheibla@ci.monterey.ca.us
Cc: "richard.greenwood" <Richard.Greenwood@slc.ca.gov>, "Keen, Kelly@SLC" <Kelly.Keen@slc.ca.gov>

PRE SURVEY NOTIFICATION FOR GEOPHYSICAL SURVEY

The USGS Pacific Coastal and Marine Science Center (PCMSC) will be conducting one five-day near shore geophysical survey from Santa Cruz to Moss Landing, CA under California State Lands Permit #8394. A bathymetric survey using two personal watercraft, each equipped with a 200 kHz single beam echo sounder, will be used to conduct cross shore transects from within the surf zone out to 1200m from shore to document the effects of large wave events on seafloor morphology. One of the following three operational windows will be chosen based on scheduling and conditions.

September 12-21, 2016

September 26 - October 7, 2016

October 11-21, 2016

In keeping with our California State Lands Permit requirements, we are providing you with the attached Geophysical Pre-Survey Notice for your information.

--
Jenny White
Marine Operations Manager
Pacific Coastal and Marine Science Center
U.S. Geological Survey
(831) 818-8915 cell
(831) 460-7485 work

CSLC EXHIBIT F - Monterey Bay Storm Impacts Sept-Oct 2016.docx
467K

White, Jennifer <jennifer_white@usgs.gov>

Pre-survey Notice of Geophysical Survey Operations on Monterey Bay - Dive shops

White, Jennifer <jennifer_white@usgs.gov> Mon, Aug 22, 2016 at 11:57 AM
Draft To: tascuba@live.com, info@montereybaydiving.com, infomb@sevenseasscuba.com, dive@silverprincecharters.com, dive@aquarius2.com, David Todd <dave@montereyblue.com>, Jim Fields <info@mbdcscuba.com>, info@aquariusdivers.com, info@asudoit.com
Cc: "richard.greenwood" <Richard.Greenwood@slc.ca.gov>, "Keen, Kelly@SLC" <Kelly.Keen@slc.ca.gov>

PRE SURVEY NOTIFICATION FOR GEOPHYSICAL SURVEY

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Marine Wildlife Mitigation Plan
Storm Impact Study Bathymetric Survey
Monterey Bay, CA.

(September 12 – October 21, 2016)

1.0 INTRODUCTION

This marine wildlife mitigation plan is prepared in compliance with the USGS Pacific Coastal and Marine Science Center's existing State Geophysical Permit PRC 8394. This plan is intended to provide guidance to USGS vehicle operators and scientific field personnel collecting geophysical data for the Pacific Coastal and Marine Science Center (PCMSC) in Santa Cruz, CA to avoid significant impacts to marine wildlife that may occur during regular geophysical surveys.

1.1 Regulatory Basis

Species that are either currently in danger or soon likely to be in danger of extinction throughout all or a portion of its range are protected by the Endangered Species Act of 1973. The United States Fish and Wildlife Service (USFWS), and the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) implement the Endangered Species Act. During the consultation with NMFS to issue a permit for the offshore geophysical survey, it was determined no incidental take permits are required to use the equipment identified in this document to conduct scientific data acquisition in federal waters offshore of the California coast.

1.2 Geophysical Survey Purpose and Objectives

The USGS Pacific Coastal and Marine Science Center will study and evaluate the effects of storms on important geological resources and processes of the northern Monterey Bay, California. The primary coastal feature that will be studied is the beach sediments that make up the region's littoral cell.

The beaches of the northern Monterey Bay have strong seasonal dynamics and respond to wave forcing and coarse-grained sediment supplies that come primarily from coastal streams and rivers (Figure 2; Hicks and Inman, 1987; Dingier and Reiss, 2002; Warrick and Barnard, 2012). The sediments of these beaches are commonly the first—and in some places the final—defenses against coastal flooding during winter storms, and these sediments provide important recreational and ecological resources (Dugan et al, 2003). The goal of the second proposed effort is to build a better understanding of the dynamics of littoral sediment—both onshore and offshore of the beach—so that better predictions of coastal change and coastal flooding can be made for the Monterey Bay region. Focus will be placed on mapping nearshore topography and bathymetry in high-resolution; focus will also be placed on mapping regions near sediment sources such as rivers and creeks and near important coastal resources along the Santa Cruz littoral cell.

This work will allow the USGS to evaluate the important patterns, processes and effects of the geological systems in the northern Monterey Bay, and this work would continue the beneficial research relationships between the USGS and the Monterey Bay National

Marine Sanctuary (e.g., Eittreim et al., 2002; Storlazzi et al, 2007; Storlazzi et al., 2013). We are particularly interested in the effects of storms during El Nino winters (such as 2015-16), when seasonally higher water levels and larger waves have historically had significant impacts on the beaches in the region.

PCMSC will contact the NOAA Long Beach Office staff and local whale-watching operations to acquire information on the current composition and relative abundance of marine wildlife offshore as well as any pinniped haul out sites. Whale activity is moderate at the moment. The peak whale season is February - May in the Monterey Bay. Whale activity in the area has decreased in the past month. At the center of northernmost survey line, the survey area will be no closer than 400 meters of a known pinniped haul out site at Point Santa Cruz. Additionally, one day prior to survey activities, the NOAA Long Beach office, local whale watching operations will be contacted to get an update on marine wildlife sightings in the area. This information will be conveyed to the captain and crew prior to the survey.

A review of environmental responsibility of project operations will be conducted by the chief scientist in charge of the survey operations prior to commencing the first day of operations. When new personnel will be in the crew, this training will be repeated at least for those new to the crew. They will be made aware of their individual responsibility and will be shown how to be aware of possible environmental impacts and how to mitigate them during the geophysical survey operations. Information relating to seasonality, as an indication of the types of animals that might be in our survey area, at the time of survey work will also be presented to the crew. A copy of this document will be provided to the crew of our survey vehicles.

All personnel will be expected to be consistently aware that they are to be alert to any presence of marine wildlife while they are performing their duties. There are a number of signs/indications of marine wildlife presence and each crew member will be responsible to maintain vigilance for those signs within the constraints of their project duties. Some of those indications are:

a. Sounds - such as splashing, vocalizations (by animals and birds), and blowing (breathing).

b. Visual indications - birds aggregating, changes in water character such as areas of rippled
water, white water caused by splashing, changes in color or shape of the ocean surface

1.3 Survey Schedule and Layout

The Project schedule will be from September 12 – October 21, 2016. These dates include three tidal windows when data may be collected. Survey operations are expected to be completed in five days. The proposed mapping areas are along the sandy-beach fronted shorelines of the northern Monterey Bay; the survey vehicles will not be used near rocky reefs and kelp beds. For safety reasons, the survey vehicles are always used in tandem—two at a time— with personnel support on the adjacent beach. Depending on survey date, the survey vehicles will be launched from either Santa Cruz Harbor or Moss Landing Harbor and will transit at safe speeds to the survey locations. Surveys will be conducted during high tides, and across-shore transects will be surveyed from the surf

zone (about 1 m depth) to 1-2 km offshore. Survey vehicle operators will operate on survey lines only when conditions are safe and swimmers, paddlers, and wildlife are not present. Data collected in this region are critical however, as most of the sand movement in nearshore areas occurs at shallow depths (*cf.* Figure 2). Sediment volume changes will be calculated from profile data to determine the rates of net sediment transport between different reaches of the beach, as well as the rates of net on- or offshore transport. This will aid in determining littoral drift rates and in constructing a sediment budget for the system.

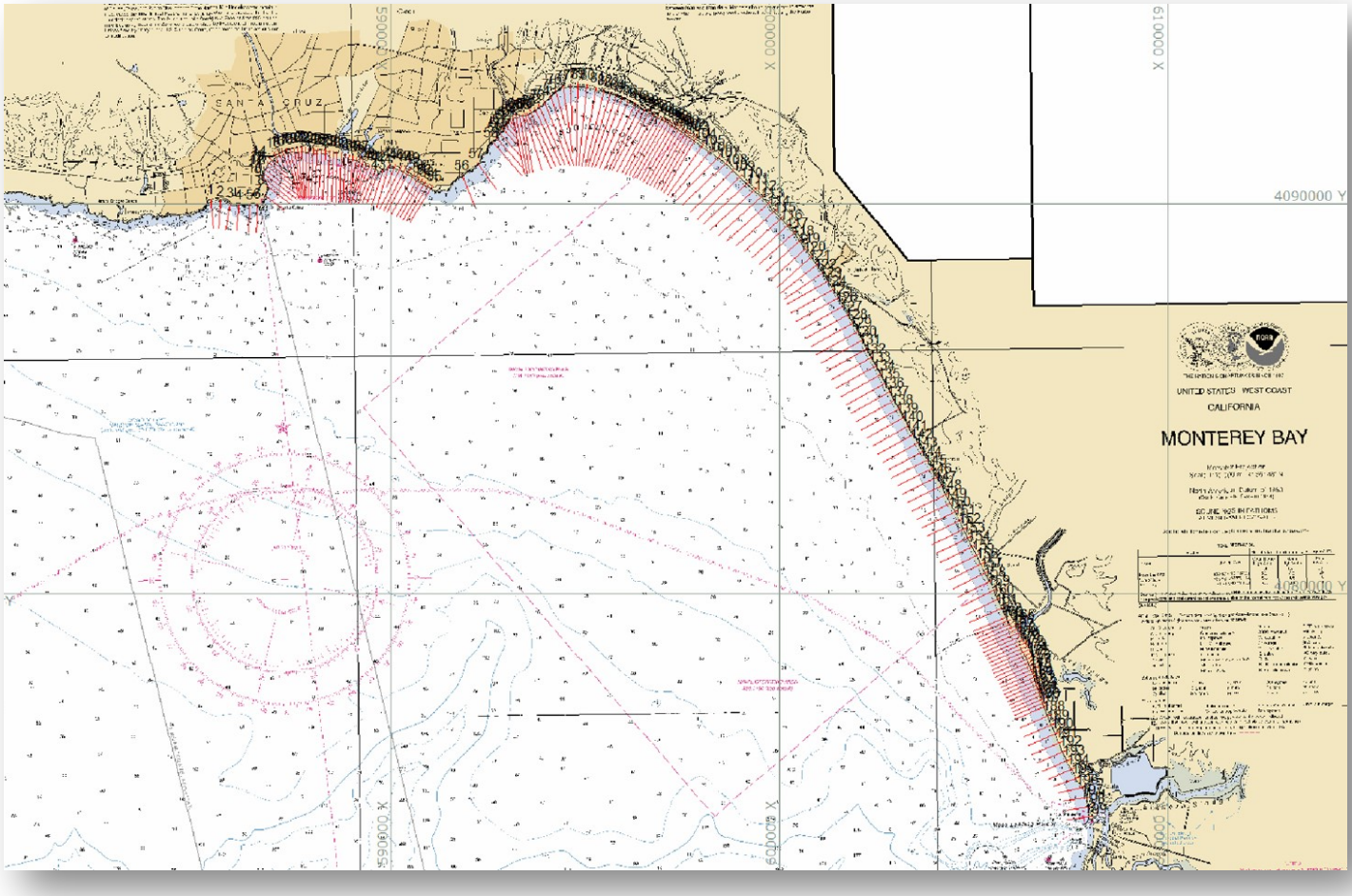

Figure 1. Regional Map of Survey Area

2.0 Survey Equipment and Activities

Bathymetric mapping will utilize two USGS Coastal Profiling Systems (CPS), which consist of a personal watercraft instrumented with GPS-based mapping systems and fathometers (Figure 3a). The CPS are identical to the systems used in previously permitted research in the MBNMS (see Storlazzi et al., 2007). CPS are not operated in high surf (generally greater than 5 feet) or in difficult weather conditions such as fog or rain. All CPS operators are USGS employees, insured, and safety-certified by the U.S. Department of Interior.

PCMSC proposes to use the following equipment to collect the required data:

- Odom Echotrac CV100 echo sounder using a 200 kHz, 9° downward conical beam transducer

The proposed survey will require the use of a marine vehicle and in-water equipment that generate noise during data acquisition. The results of modeling of the noise generated by the survey equipment is shown in Table 1. Those results indicate that operational source level used for these surveys are less than 160 dB at any range.

Table 1. Distances to Received Pressure Levels from Equipment Sound Source

Sounder System	Frequency (kHz)	Source Level (dB peak)	Source Level (dB rms)	Distance toSL160 dBrms (meters)	Distance to SL 180 dB (rms) (meters)	Distance toSL190 dB (rms) (meters)
Odom Echotrac CV100 Echo Sounder	200 kHz	109	93	<1	<1	<1

These estimates are based on the underwater sound propagation equation:

RSPL= SL-20log (R/Ro)-AR where,
RSPL=Recieved sound potential level
SL= RMS source level re. 1 uPa (rms) based on manufacturer's specifications
R= Distance
Ro= Reference Distance (1 m)
A= sound absorption coefficient

The greatest distance from the sound source to the 160 dB level (<1 m) for the proposed equipment) is considered the "safety zone" for this equipment. However, because the operating frequency of 200 kHz is above the cutoff hearing threshold for marine mammals, CSLC has determined that the observance of the "safety zones" is not a requirement for this survey (personal communication, K. Keen, CSLC).

3.0 Marine Wildlife

3.1 Marine Wildlife

The following discusses the marine wildlife that have been recorded within the project region, those taxa that are most likely to be within the larger project region during survey operations, and methods that will be instituted by the vehicle operator to reduce or eliminate potential impacts to marine wildlife during transit and survey operations.

Table 2 provides information on the seasonal variations in the marine wildlife that are expected to be or have been reported within the Project area.

Table 2: Abundance Estimates for Marine Mammals and Reptiles of California Unless Otherwise Indicated

Common Name ***Scientific Name***	**Population Estimate**	**Current Population Trend**
REPTILES		
Cryptodira		
Olive Ridley turtle *Lepidochelys olivacea*	1.39 million (Eastern Tropical Pacific)**	Increasing
Green turtle *Chelonia mydas*	3,319-3,479** (Eastern Pacific Stock)	Increasing
Loggerhead turtle *Caretta caretta*	1,000 (California)**	Decreasing
Leatherback turtle *Dermochelys coriacea*	178 (California)**	Decreasing
MAMMALS		
Mysticeti		
California gray whale *Eschrichtius robustus*	18,017 (Eastern North Pacific Stock)	Fluctuating annually
Fin whale *Balaenoptera physalus*	2,624 (California/Oregon/Washington Stock)	Increasing off California
Humpback whale *Megaptera novaeangliae*	1,878 (California/Oregon/Washington Stock)	Increasing
Blue whale *Balaenoptera musculus*	2,046 (Eastern North Pacific Stock)	Unable to determine
Minke whale *Balaenoptera acutorostrata*	202 (California/Oregon/Washington Stock)	No long-term trends suggested
Northern right whale *Eubalaena japonica*	17 (based on photo-identification) (Eastern North Pacific Stock)	No long-term trends suggested
Sei whale *Balaenoptera borealls*	83 (Eastern North Pacific Stock)	No long-term trends suggested
Odontoceti		
Short-beaked common dolphin *Delphinus delphis*	343,990 (California/Oregon/Washington Stock)	Unable to determine
Long-beaked common dolphin *Delphinus capensls*	17,127 (California Stock)	Unable to determine
Dall's porpoise *Phocoenoides dalli*	32,106 (California/Oregon/Washington Stock)	Unable to determine
Harbor porpoise *Phocoena phocoena*	1,478 (Morro Bay Stock)	Increasing
Pacific white-sided dolphin *Lagenorhynchus obllquldens*	21,406 (California/Oregon/Washington Stock)	No long-term trends suggested
Risso's dolphin *Grampus griseus*	4,913 (California/Oregon/Washington Stock)	No long-term trends suggested
Short-finned pilot whale *Globicephala macrorhynchus*	465 (California/Oregon/Washington Stock)	No long-term trends suggested
Bottlenose dolphin *Turslops truncates*	684 (California/Oregon/Washington Offshore Stock)	No long-term trends suggested
	290 (California Coastal Stock)	No long-term trends suggested
Northern right whale dolphin *Llssopelphis borealis*	6,019 (California/Oregon/Washington Stock)	No long-term trends suggested
Sperm whale *Physeter macrocephalus*	751 (California/Oregon/Washington Stock)	No long-term trends suggested
Killer whale Orcinus orca	85 (Eastern North Pacific Southern Resident Stock)	Decreasing
	162 (Eastern North Pacific Offshore Stock)	No long-term trends suggested
Pinnipedia		
California sea lion *Zalophus californianus*	141,842 (U.S. Stock)	Unable to determine; increasing in most recent three year period

Northern fur seal *Callorhinus ursinus*	5,395 (San Miguel Island Stock)	Increasing
Guadalupe fur seal *Arctocephalus townsendi*	3,028 (Mexico Stock) Undetermined in California	Increasing
Northern (Steller) sea lion *Eumetopias jubatus*	2,479 California Stock	Decreasing
Northern elephant seal *Mirounga angustirostris*	74,913	Increasing
Pacific harbor seal *Phoca vitulina richardsi*	31,600	Stable
Fissipedia		
Southern sea otter *Enhydra lutris nereis*	2,711*	Unable to determine

Estimates provided by National Marine Fisheries Service (NOAA Fisheries 2011) *

Estimate provided by USGS (2010)

** Estimates provided by National Marine Fisheries Service (NMFS) (2004), Marquez, et al. (2002), Eguchi et ai. (2007), Benson et al. (2007), and NMFS (2007). Estimates are based on number of current numbers of nesting females.

During the transit periods, there is a potential for encountering marine wildlife. Table 3 lists those species that are likely to occur in the survey area

Table 3. Marine Wildlife Species and Most Likely Periods of Occurrence within the Survey Area

Family Common Name	Month of Occurrence [1]											
	J	F	M	A	M	J	J	A	S	O	N	D
REPTILES												
Cyptodira												
Olive Ridley turtle *(T)* [2]												
Green turtle (T) [1],[2]												
Loggerhead turtle (T) [2]												
Leatherback turtle (E) [2]												
MAMMALS												
Mysticeti												
California gray whale												
Blue whale (E)												
Fin whale (E)												
Humpback whale (E)												
Minke whale												
Sei whale (E)												
Northern right whale (E)												
Odontoceti												
Short-beaked common dolphin												
Dall's porpoise												
Harbor porpoise												
Long-beaked common dolphin												
Pacific white-sided dolphin												
Risso's dolphin												
Sperm whale												
Short-finned pilot whale												
Bottlenose dolphin												
Northern right whale dolphin												
Killer whale												
Pinnipedia												
Northern fur seal [3]												
California sea lion												
Northern elephant seal [4]												
Pacific harbor seal												
Guadalupe fur seal (T)												
Steller sea lion												
Fissipedia												
Southern sea otter (T) [5]												
Relatively uniform distribution		Not expected to occur					Most likely to occur due to seasonal distribution					

(E) Federally listed endangered species.
(T) Federally listed threatened species.
(1) Not Used
(2) Rarely encountered, but may be present year-round. Greatest abundance during July through September.
(3) Only a small percent occur over continental shelf (except near San Miguel rookery, May-November).
(4) Common near land during winter breeding season and spring molting season.
(5) Only nearshore (diving limit 100 feet).
Sources: Bonnell and Dailey (1993), NOAA Fisheries (2011), NCCOS (2007)

4.0 ONBOARD MITIGATIONS

4.1 Fishing Gear Clearance

In addition to submitting the required Notice to Mariners that will advise commercial fishers of pending on-water activities, prior to the start of each survey day the vehicles will traverse the proposed survey corridor for that day to note and record the presence of deployed fishing gear. No survey lines within 30 m (100 ft) of the observed fishing gear will be completed. The survey crew will not remove or relocate any fishing gear; removal or relocation will only be accomplished by the owner or by an authorized CDFW agent.

4.3 Marine Wildlife Monitoring

NOAA does not require exclusion/safety zones to be monitored. The operational source level for these survey operations is 93 dB RMS at 200 kHz, well below the maximum 160 dB sound level considered safe for operating in the proximity of marine mammals. Because there is only one CPS operator on board the survey vehicle during survey operation, their primary responsibilities during survey operations is the safe operation of the vehicle and operation of the data acquisition system, it is not possible for them to log wildlife observation data. However, the operator will provide a narrative of any sightings or encounters with marine wildlife during the day's survey operations and these narratives will be provided in the summary report for each survey.

4.3 Mitigations During Transit and Survey

The research vehicles will transit during daylight hours from Santa Cruz harbor. During transits, there is a potential for encountering marine wildlife and the vehicle operators will take every precaution to avoid close proximity to wildlife. During transits, the vehicle will maintain a minimum distance of 100 m (1,640 ft.) from observed animals. If the vehicle operator observes a marine mammal within the path of the transiting vehicle, they will immediately slow the vehicle and/or change course in order to avoid contact.

Cetaceans (whales) vary in their swimming patterns and duration of dives and therefore all shipboard personnel will be watchful as the vehicle crosses the path of a whale or anytime whales are observed in the area.

If whales are observed during transits, the vehicle operator will institute the following measures:

- Maintain a minimum distance of 100 m from sighted whales;
- Do not cross directly in front of or across the path of sighted whales;
- When transit directions is parallel to whale path, maintain constant speed that is not greater than the whales speed, or alter transit direction away from whale path;
- Do not position the vehicle in such a manner to separate female whales from their

calves;

- If a whale engages in evasive or defensive action, slow the vehicle and move away from the animal until the animal calms or moves out of the area.

During survey operations, the vehicle will maintain survey a speed of approximately 4 knots and will maintain a heading that coincides with survey track lines. If marine wildlife is observed within the vicinity of the vehicle, the vehicle operator will take precautions to avoid collision, ending and restarting the track line survey if necessary.

If a collision with marine wildlife occurs, the vehicle operator will document the conditions under which the accident occurred, including the following:

- Location of the vehicle when the collision occurred (latitude and longitude);
- Date and time;
- Speed and heading of the vehicle;
- Observed conditions (e.g., wind speed and direction, swell height, visibility in miles or kilometers, and presence of rain or fog);
- Species of marine wildlife contacted; and
- Organization, vehicle ID and name of master in charge of the vehicle at time of accident.

In accordance with NOAA requirements, after a collision, the vehicle should stop, if safe to do so. The vehicle may proceed after confirming that it will not further damage the animal by doing so. The vehicle will then communicate by radio or telephone all details to the vehicle's base of operations. The PCMG Marine Operations Superintendent will contact the Stranding Coordinator, NMFS, Southwest Region, Long Beach, to obtain instructions. Alternatively, the vehicle captain may contact the NMFS Stranding Coordinator directly using the marine operator to place the call or directly from an onboard telephone, if available to:

NOAA Southwest Regional Stranding Coordinator
National Marine Fisheries Service
501 West Ocean Blvd, Suite 4200
Long Beach, CA 90802-4213
562-980-4017
Contact: Justin Viezbicke
Email: justin.viezbicke@noaa.gov

It is unlikely that the vehicle will be asked to stand by until NOAA or CDFW personnel arrive, however this will be determined by the Stranding Coordinator. According to the MMPA, the vehicle operator is not allowed to aid injured marine wildlife or recover the carcass unless requested to do so by the NOAA Stranding Coordinator.

Although NOAA has primary responsibility for marine mammals in both state and federal waters, the CDFG will also be advised that an incident has occurred in state waters affecting a protected species. Reports should be communicated to the federal and state agencies listed below:

Federal	**State**	**State**
Justin Viezbicke, California Stranding Coordinator National Marine Fisheries Service Long Beach, California (562) 980-4017	Enforcement Dispatch Desk California Department of Fish and Wildlife Long Beach, California (562) 590-5132	California State Lands Commission Division of Environmental Planning and Management Sacramento, California (916) 574-1938

4.4 Operational Measures

Soft Start

The soft-start technique required for sonar equipment operating above the hearing threshold for marine mammals at 200 kHz is predicated on research investigations of low frequency side lobes for 200 kHz sonar systems (Deng et al., 200 kHz Commercial Sonar Systems Generate Lower Frequency Side Lobes Audible to Some Marine Mammals, PLOS ONE, 2014). This work was based on a measured 90 kHz sub harmonic at 141 dB re. 1µPA @ 1m generated by a 200 kHz sonar signal at 195 dB re. 1µPA @ 1m and a marine mammal hearing threshold of 70 dB . Modeling of our system's equivalent source levels based on their measurements, our echo sounder would generate a 90 kHz harmonic at 69 dB re. 1µPA @ 1m, which is below the hearing threshold of concern, within 1 m from the vehicle. We conclude from this that a soft start technique has no practical application for our survey operations. However, we nonetheless intend to take a conservative approach by increasing power upon startup at a 25% increase in power from zero to our operational power level of 93 dB over a five minute period.

Wildlife Monitoring

Marine wildlife monitoring will not be required by onboard personnel for these operations, but the operator will provide a narrative of any observations that occur within the survey area.. Because the survey echo sounder operated above 200 kHz, no safety zone is required. However, USGS will take the following precautionary measures:

- Not approach within 300 m of the haul-out site (consistent with NMFS guidelines);
- Expedite survey activity in this area in order to minimize the potential for disturbance of pinnipeds on land;
- Pinniped haul out site location is given in Table 4.
- The vehicle will continuously monitor the daily survey area to ascertain the presence, species and location of any marine wildlife is apparent in the intended survey area. The

vehicle master and onboard personnel will be watchful whales or marine mammals are observed in the area. The vehicle operator shall observe the following guidelines:

- Make every effort to maintain distance from sighted marine mammals and other marine wildlife;
- Do not cross directly in front of (perpendicular to) migrating whales or any other marine mammal or turtle;
- When paralleling marine mammals or turtles, the vehicle will operate at a constant speed that is not faster than that of the animals;
- Care will be taken to ensure female whales are not separated from their calves; and, if a whale engages in evasive or defensive action, the vehicle will reduce speed or stop until the animal calms or moves out of the area.

Table 4 Pinniped Haul Out Locations

LOCATION	SPECIES	LATITUDE	LONGITUDE
Point Santa Cruz, Santa Cruz, CA	California Sea Lion	36.95	-122.03
Soquel Point, Santa Cruz, CA	California Sea Lion	36.95	-122.98
Cement Ship, Aptos, CA	California Sea Lion	36.97	-122.91

Vehicle Speed

The CPS operator will refrain from erratic operating behavior when transiting to the survey site and shall operate at, or less than, a speed of approximately 4 knots once on survey station.

Limitations on equipment usage

Limitations on the frequency, pulse length, and pulse rate will be implemented to reduce potential harmful noises. The shortest possible pulse length and lowest pulse rate (pings per second) will be used, dependent on water depth.

4.5 Monitoring Reporting

A Post Survey Field Operations and Compliance Report will be submitted to CSLC staff as soon as possible but no more than 30 days after the completion of survey activities.

U.S. GEOLOGICAL SURVEY
PACIFIC COASTAL AND MARINE GEOLOGY SCIENCE CENTER

MANAGEMENT OF ACCIDENTAL DISCHARGE AND VESSEL INCIDENTS DURING OFFSHORE GEOPHYSICAL SURVEYS

1.0 INTRODUCTION

The survey operations will be conducted using two USGS personal watercraft (jet skis) that comprise our Coastal Profiling Systems (CPS). Because of the vehicle's small size, it is anticipated that response to any operational spills will be quickly identified and response will be initiated quickly and efficiently by the vehicle operator. Oil spills in United States (U.S.) marine waters shall be reported immediately.

2.0 OPERATIONAL SPILLS

Operational spills might involve one or more of the following substances carried on board the vehicles: (i) fuel and (ii) lube oil. The vehicles are equipped with woven polypropylene sheets (5 sheets) for rapid absorption of surface oil and protective gloves (1 pair), and a disposal bag (1) This oil spill materials are located in the forward cabinet of the vehicle. This spill kit is rated to clean up .25 gallons of liquid. All of the liquids (listed below) that could cause a hazardous spill are either in the fuel tank or in the vehicle engine. Spill occurrence will likely be during fueling, in the event of grounding or if any instance occurred that punctured the gas tank. In the event a spill occurred in the engine compartment, the oil spill kit would be used to contain the hazardous liquids and the bilge would not be emptied until it could be pumped out at a hazardous waste facility. We do not anticipate a spill of greater than .25 gallons.

(i) Fuel:

A spill kit shall be available for use in the event of a spill. If the fuel is spilled on the deck, it shall be immediately removed, bagged and disposed of at an appropriate hazardous waste reception facility. In the event of spillage in the water, the vessel master shall notify the Coast Guard and port facility.

(ii) Lube oil:

A spill kit shall be available for use in the event of a spill. If the oil is spilled in the machinery space, it shall be immediately removed, bagged and disposed of at an appropriate hazardous waste reception facility. In the event of spillage in the water, the vehicle operator shall notify the Coast Guard and port facility.

3.0 EMPLOYEE TRAINING ON OIL SPILL CONTINGENCY PLAN

Prior to the launching of the vessel for any activities, all captain and crew members on the vessel will have read the Oil Spill Contingency Plan, understand procedures to be implemented in the event of an oil spill, and know where the oil spill kit is located on the vessel.

4.0 VESSEL FUELING

All vessel fueling will be conducted at an approved docking facility. No cross vessel fueling will be performed. Appropriate spill avoidance measures during filling procedures will be observed. Refueling of the CPS is not allowed at the shoreline unless there is a compelling reason to do so and sufficient spill response equipment to address a spill is on site (i.e., sorbent and containment materials equal to approximately one-third the capacity of the fuel tank).

5.0 PRIORITY ACTIONS TO ENSURE PERSONNEL AND VESSEL SAFETY

Safety of vehicle operators and the vehicles are paramount. In the event that a crewman's injuries require outside emergency assistance, the PCMG safety officer shall be contacted immediately and emergency personnel contacted. While awaiting emergency assistance, the on board vessel master or qualified vessel crew personnel will render first aid and/or CPR. The nearest emergency medical facilities for this area is:

Dominican Hospital Emergency Department
1555 Soquel Dr, Santa Cruz, CA 95065
(831) 462-7710

6.0 MITIGATING ACTIVITIES

If safety of both the vessel and the personnel has been addressed, the vessel master shall care for the following issues:

- Assessment of the situation and monitoring of all activities as documented evidence.
- Care for further protection of the personnel, use of protective gear, assessment of further risk to health and safety.
- Containment of the spilled material by absorption and safe disposal within leak proof containers of all used material onboard until proper delivery ashore, with due consideration to possible fire risk.
- Decontamination of personnel after finishing the cleanup process.

7.0 EMERGENCY CONTACTS FOR STATE AND FEDERAL AGENCIES

Emergency numbers for U.S.C.G. for the San Francisco and Central Coast Areas are:

Pacific SAR Coordinator - Alameda: 510-437-3700

Rescue Coordination Center, Alameda: 510-437-3700

Any oil spill in U.S. marine waters shall be reported immediately to the following state and agencies:

West Coast Oil Spill hot-line	800-OELS-911, *or*
Department of Fish and Game CalTIP	888-CFG-CALTip
(Californians Turn In Poachers & Polluters)	(888-334-2258). *and*
U.S. Coast Guard National Response Center	800-424-8802
California Office of Emergency Services (OES)	800-OILS-911 or 800-852-7550.

During the phone call, the following information will be given over the phone.

a. Name and telephone number of caller.
b. Spill location
c. What was spilled (oil, gas, diesel, etc.)
d. Estimated size of spill
e. The date & time spill was identified (same day).
f. Any oiled or threatened wildlife
g. Source of spill, if known
h. Activity observed at the spill site

After taking the necessary actions, the spill will be reported in writing to the Governor's Office of Emergency Services on their forms.

Additionally, California Department of Fish and Game certified wildlife rescue/response organizations will be contacted about the spill. In the Southern California area, these include the following contacts:

Oiled Wildlife Care Network	Animal Advocates
1-877-UCD-OWCN	323-651-1336
California Wildlife Center	South Bay Wildlife Rehab
310-458-9453	310-378-9921

U.S. GEOLOGICAL SURVEY
PACIFIC COASTAL AND MARINE GEOLOGY SCIENCE CENTER

GEOPHYSICAL SOUND SOURCE SYSTEMS MAINTENANCE RECORD

Odom Echotrac CV-100 Echo Sounder - 200 kHz Serial # 26067

1.0 Introduction

The USGS Pacific Coastal and Marine Science Center (PCMSC) owns and operates a broad range of geophysical sound sources, seafloor mapping systems, geologic and geotechnical sediment sampling systems, and oceanographic instrument systems. This requires considerable technical and operational support to successfully undertake and complete its field programs. Operational and technical support for these systems is provided by the PCMSC Marine Operations Facility (Marfac) in Santa Cruz, CA. Our Marfac group is staffed by a team of ten ocean engineers, electronics technicians, and marine engineering technicians. They operate, maintain and repair all geophysical and oceanographic systems used to support all of PCMSC's scientific field operations.

The Odom Echotrac ECTV-100 echo sounder is owned and operated by PCMSC. This system has been thoroughly checked, tested and calibrated according to the manufacturer's (Teledyne Odom) recommended procedures. This system is comprised of the Echotrac CV-100 Acquisition Controller/Power supply (Serial # 26067) and a 200 kHz transducer, Model # SMBB200-9. The results of this evaluation confirms the echo sounder system to be operating at Teledyne Odom's stated specifications in all regards.

System checkout includes physical inspection of all components, cables, connectors and electronics for any signs of corrosion, wear or damage, all necessary cleaning and full functionality checks.

These procedures were followed by a full at-sea check of all system parameters in order to confirm system performance meets specs. The Odom Echotrac CV-100 is fully compliant with Teledyne Odom stated capabilities and specifications.

Jenny White

Jenny White, Marine Superintendent

11/7/15

Date

U.S. GEOLOGICAL SURVEY
PACIFIC COASTAL AND MARINE GEOLOGY SCIENCE CENTER

GEOPHYSICAL SOUND SOURCE SYSTEMS MAINTENANCE RECORD

Odom Echotrac CV-100 Echo Sounder - 200 kHz Serial # 26331

1.0 Introduction

The USGS Pacific Coastal and Marine Science Center (PCMSC) owns and operates a broad range of geophysical sound sources, seafloor mapping systems, geologic and geotechnical sediment sampling systems, and oceanographic instrument systems. This requires considerable technical and operational support to successfully undertake and complete its field programs. Operational and technical support for these systems is provided by the PCMG Marine Operations Facility (Marfac) in Santa Cruz, CA. Our Marfac group is staffed by a team of ten ocean engineers, electronics technicians, and marine engineering technicians. They operate, maintain and repair all geophysical and oceanographic systems used to support all of PCMGSC's scientific field operations.

The Odom Echotrac ECTV-100 echo sounder is owned and operated by PCMSC. This system has been thoroughly checked, tested and calibrated according to the manufacturer's (Teledyne Odom) recommended procedures. This system is comprised of the Echotrac CV-100 Acquisition Controller/Power supply (Serial # 26331) and a 200 kHz transducer, Model # SMBB200-9. The results of this evaluation confirm the echo sounder system to be operating at Teledyne Odom's stated specifications in all regards.

System checkout includes physical inspection of all components, cables, connectors and electronics for any signs of corrosion, wear or damage, all necessary cleaning and full functionality checks.

These procedures were followed by a full at-sea check of all system parameters in order to confirm system performance meets specs. The Odom Echotrac CV-100 is fully compliant with Teledyne Odom stated capabilities and specifications.

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